Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion To Digital Television	)	MB Docket No. 03-15
	)	RM 9832
Public Interest Obligations of TV Broadcast Licensees	)	MM Docket No. 99-360
Children's Television Obligations of Digital Television Broadcasters	)	MM Docket No. 00-167
Standardized and Enhanced Disclosure Requirements for Television Broadcast Licensee Public Interest Obligations	)	MM Docket No. 00-168

Comments of Sharp Electronics Corporation

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Summary

Sharp Electronics Corporation ("Sharp"), a digital television receiver manufacturer, is a key industry player in the Commission's regulation and oversight of the digital television ("DTV") conversion process. Sharp's general guiding theory on the DTV transition is that a market-driven approach is preferable, and that the Commission should adopt rules that encourage, allow, or require conditions that create and foster consumer demand for digital receivers and displays.

Sharp submits these comments to address the following:

(1) The slow progress on the production of a substantial amount of HDTV programming and consensus for carriage of such programming has remained an obstacle to the DTV transition.

(2) Despite the clear benefits of the Program and System Information Protocol ("PSIP"), broadcast of PSIP information is not required and is often poorly implemented, leading to channel number and navigation problems, among others, as well as consumer confusion.

(3) The Commission should require use of the Active Format Description data ("AFD") to take advantage of the myriad of benefits for consumers.

(4) Facilitation of an established TSID assignment process is necessary to ensure consumer receivers can properly operate tuning and navigation functions.

Sharp encourages the Commission to adopt regulations that facilitate and foster the conversion to digital television and consumer demand for digital receivers and displays. Sharp recommends the following actions to further these goals:

(1) Establish a defined deadline for permitting market forces to govern the production and carriage of HDTV programming, which, if is not met, will result in government-imposed mandates;

(2) Make the ATSC A/65B PSIP Standard mandatory;

(3) Make broadcast of the AFD mandatory in certain circumstances; and

(4) Facilitate the incorporation of the TSID Assignment process into its rules.

I. Introduction

Sharp Electronics Corporation ("Sharp") respectfully submits these comments in the above-captioned proceeding concerning the Second Periodic Review of the Commission's Rules and Policies Concerning the Conversion to Digital Television.[1]

The NPRM presents a wide-ranging and comprehensive set of questions that seek comment on the Commission's rules on the conversion to digital television. Sharp is a participant in the transition by virtue of marketing digital television receivers and other related products. As Sharp is neither a broadcaster nor a content producer, however, its comments are limited to particular questions and issues from the NPRM that impact Sharp from the perspective of a digital television receiver manufacturer.

II. General Theory

Sharp's general guiding theory on the DTV transition is that a market-driven approach is preferable, and that the Commission should adopt rules that encourage, allow, or require conditions that create and foster consumer demand for digital receivers and displays.

III. Clarification of Terminology

In various questions in the NPRM, the term *program stream*[2] is used to mean "MPEG-2 Transport Stream Program", inadvertently raising ambiguity with "MPEG-2 Program Stream." An MPEG-2 Transport Stream is a 188-byte packetized stream suited to broadcast in error-prone environments. An MPEG-2 Program Stream is not used for

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1 *See* In the Matter of Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, *Notice of Proposed Rulemaking*, FCC 03-8, MB Docket No. 03-15 ("*NPRM*").

2 *See NPRM* ¶¶ 115, 116, 119, 120, 121, 125.

broadcast television, but it is used for non-error-prone environments, such as the DVD format.

Furthermore, there seems to be a distinction drawn between information carried in ATSC A/65 PSIP and information carried in the "program stream." Sharp believes that the Commission uses "program stream" to mean the collection of elementary streams that are the program content, in conjunction with the metadata (*e.g.,* "MPEG-2 Program Specific Information," PAT, and PMT) describing that program.

In our response, we refer to a "program" in the sense of "MPEG-2 Transport Stream Program." Sharp does not find a useful distinction, however, between MPEG-2 PSI and ATSC A/65 PSIP in the ATSC broadcast system – some information is duplicated between the two sets of information, but much information is useful from both sets and a complete description of the system only exists in the combination of both.

IV. Comments on NPRM Questions

A. Obstacles to the DTV Transition Progress

In this proceeding, the Commission seeks comment on obstacles that are slowing the transition of digital television and what steps must be taken to address these obstacles.[3] Sharp feels that one of the main problems slowing the DTV transition is the lack of large amounts of HDTV programming currently carried on cable systems. The inability of consumers to access ample amounts of HDTV programming on cable systems results in the reduced incentive for consumers to purchase DTV equipment, thereby hindering the transition.

[3] *Id.* ¶ 18.

In order for the transition to DTV to be successful, consumers must desire to purchase DTV-capable receivers and displays. It is clear that consumers will not fully embrace DTV and DTV-related equipment until a sufficiently large amount of digital programming is generally available. Further, it is necessary that consumers have access to this digital programming through their primary delivery provider, their local cable operator.

In its 2001 Carriage of Digital Television Broadcast Signals *First Report and Order and Further Notice of Proposed Rulemaking*, the Commission required cable operators to carry the programming of digital-only television stations, but did not require dual carriage of analog and digital programming.[4] Currently, it is left to the broadcasters and the cable operators to negotiate carriage of HDTV programming. While market forces are certainly preferable to government-imposed mandates, unfortunately progress has been slow in rolling out HDTV carriage.

As a result, consumers have limited access to the HDTV programming that arguably would be made available if more HDTV programming were produced and broadcasters and cable companies were able to reach agreements on the carriage of this digital programming. The top ten cable operators have offered to carry the signals of up to five digital broadcast stations or other programming networks that provide HDTV during at least 50% of the cable operators' prime time schedules or a substantial portion of their

[4] *See* Carriage of Digital Television Broadcast Signals, *First Report and Order and Further Notice of Proposed Rulemaking*, 16 FCC Rcd 2598 (January 2001).

broadcast week by January 1, 2003.[5] The implementation of this commitment has been slower then many had hoped; furthermore, these five networks with prime-time HDTV generally does not include all of the local network-affiliated broadcasters. It also must be noted that in many cases the HDTV programming carried is only available by subscription to higher-priced programming networks and not on the basic tier.[6]

The inability of consumers to access HDTV content is significant, as the consumer benefits related to HDTV programming (*e.g.,* improved picture and sound quality, potential for interactive features) might provide consumers the incentive to invest in DTV equipment. Thus, Sharp recommends that the Commission establish a clearly defined deadline, such as July 1, 2004, for permitting market forces to achieve the goals of cable carriage of a substantial amount of HDTV broadcast network programming and reaching a consensus on the carriage of such programming. If this deadline is not met, the Commission should impose government-mandated requirements.

B. ATSC Standards – Active Format Description Data

In its NPRM, the Commission seeks comment on whether its rules should be updated to reflect any revisions to the ATSC DTV standard A/53B.[7] On May 23, 2002 the ATSC approved *Amendment No. 1 to the ATSC Digital Television Standard (A/53B).*[8] This amendment adds a feature that is very useful to consumer's enjoyment of both new

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5 *See Ninth Annual Report on Implementation of Section 19 of the 1992 Cable Act (Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming) (2002),* FCC 02-338, MB Docket No. 02-145, at ¶¶ 42,43.

6 *Id*.

7 *NPRM* ¶ 133.

8 *See ATSC Standard: Digital Television Standard, Revision B, with Amendment 1*, available at www.atsc.org/standards.

digital content and traditional analog content, the Active Format Description data ("AFD"). Amendment 1, however, does not require the use of AFD. As explained below, Sharp recommends that the Commission clarify its rules to require broadcasters to use the AFD as set forth in Amendment 1, when the active video portion picture does not completely fill the coded picture.

New high-definition digital displays have a wider aspect ratio screen than analog displays generally have had in the past (16:9 vs. 4:3). Content producers have been creating content for the 4:3 aspect ratio displays for many years – and much of that content is still broadcast in re-runs, syndication, and for other reasons.

In order to show wide-aspect content (cinema format, 16:9, 14:9, etc) in a 4:3 screen, a technique called 'letterboxing' is used, whereby black bars are shown at the top and bottom of a 4:3 screen, yielding an active region with the content's aspect ratio. Similarly, in order to show narrow-aspect 4:3 content in a 16:9 screen, the display device typically shows black or gray bars at the right and left of the content, in effect using only the 4:3 portion of the 16:9 display. This is sometimes called "columnboxing," reflecting the black columns to the sides.

Unfortunately, these techniques are often combined yielding what's been derisively known as "postage stamp video." This occurs when a wide image is letterboxed into a 4:3 broadcast (black top & bottom), and the 4:3 broadcast is columnboxed onto the display. Postage stamp video is particularly vexing because the original aspect ratio actually matches the display's aspect ratio.

Amendment 1 adds the AFD, which carries information about the original aspect ratio of the content, and if there are black bars on any of the four sides, where they are and how big they are. An intelligent display can therefore take the broadcast signal and display it at the optimal aspect ratio for its display – and minimizes the display of black bars.

It is difficult or impossible for a display to do this without the specific information carried in the AFD, because there are myriad aspect ratios in use, the color and locations of the black bars vary as an artistic decision and in fact move occasionally. Thus, mandating broadcast of the AFD will serve to eliminate the problems of "postage stamp video." For these reasons, Sharp recommends that the Commission clarify its rules to require broadcasters to utilize AFD when the active portion of the video picture does not fully fill the coded picture.

C. The ATSC A/65B PSIP Standard Should be Mandatory

The Commission also seeks comment on whether it should mandate the use of the ATSC A/65B PSIP standard, and whether PSIP information is essential to the proper functioning of receivers.[9] Sharp believes that, for numerous reasons, the Commission should revise its rules to incorporate the entire ATSC A/65B PSIP standard and make it mandatory for all broadcasters. The record in this proceeding is clear that PSIP provides numerous consumer benefits and, as a result, Commission rules requiring the use of PSIP will facilitate consumer adoption of DTV and speed the DTV transition process.

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[9] *NPRM* ¶ 115.

The Commission previously has considered whether to require the use of the PSIP standard, and has noted the numerous PSIP-related consumer benefits.[10] More specifically, the Commission stated that PSIP was required for v-chip operation and the announcement of closed captioned programming, and that PSIP provides the necessary channel numbering, channel navigation, broadcaster identification, and program guide constructions.[11] Despite these clear consumer benefits, the Commission stated that it did not have sufficient information at that time to require use of PSIP but that it would continue to support and encourage the voluntary use of the PSIP specification by broadcasters and cable operators. The Commission also has included a reference to the PSIP standard in Section 73.682 (d) of the rules as further guidance in implementing DTV standards.[12]

Sharp believes that the time has come for the Commission to move from encouraging use of the PSIP specification to requiring its use. Put simply, there is no reasonable alternative to many of the functions that PSIP provides. In spite of the Commission's support for the PSIP specification, some broadcasters have been slow to implement it. Further, many broadcasters that have adopted the PSIP specification have failed to spend the time and effort necessary to understand how it should be used properly.

The failure to implement the PSIP properly forces DTV receivers to be designed to recognize incorrect PSIP and discard it or attempt to understand what was meant to be

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[10] *See* Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, Second Report and Order and Second Memorandum Opinion and Order*, MM Docket 00-39, 17 FCC Rcd 15978 (August 2002), ¶¶ 52-55.

[11] *Id.* ¶ 52.

[12] *Id.* ¶ 55.

communicated – an inexact process. This process results in inexact operation and consumer confusion and a poor experience.

Moreover, when PSIP is not present, the viewer's experience is drastically affected, and in unpredictable ways. Without PSIP, users of DTV receivers are forced to choose channel numbers by other less friendly and less practical mechanisms. Further, the inability to use the PSIP results in DTV viewers being unable to access program guides and other useful program information (*e.g.,* whether future programs will contain captioning, audio options and program languages available, a program's rating, etc.).

Despite the obvious benefits of PSIP data in the DTV signal, broadcaster usage of PSIP remains less than universal, and less than correct, in many instances. Sharp believes, therefore, that the Commission should mandate PSIP in broadcast DTV transmissions, so that DTV viewers in this early, critical stage in the transition can have the best possible user experience navigating these new channels.

Additionally, as the Commission previously has noted, PSIP also provides benefits to broadcasters.[13] For example, properly implemented PSIP broadcasts allow consumers to see a broadcaster's major channel number, regardless of the broadcaster's allocated digital broadcast channel. Thus, PSIP allows broadcasters to keep their existing channel number in order to preserve the marketplace knowledge and the large investment broadcasters have made over the years marketing to their viewers.

Sharp also believes that if the Commission does indeed rule that PSIP shall be mandatory for broadcasters, the Commission should reference the latest version of PSIP:

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13 *Id.* ¶ 55.

ATSC A/65B. Further, the PSIP standard identifies those portions of the standard that are mandatory and those that are optional. As such, Sharp supports the Commission determining which portions of the standard are made mandatory simply by requiring broadcaster adherence to the latest PSIP version.

If the Commission prefers to not require adherence to the full PSIP specification, however, the very bare minimum for functionality that meets the public interest includes transmission of the Master Guide Table (MGT), System Time Table (STT), Virtual Channel Table (VCT), Service Location Descriptors (SLD), and Event Information Table 0 (EIT-0). This subset enables tuning, navigation, v-chip and closed caption operation, and thus will allow for the PSIP consumer benefits that, as discussed earlier, may help drive consumer DTV adoption.

In its NPRM, the Commission also seeks comment on whether consumer electronic equipment manufacturers build equipment to search both the PSIP, as well as the program stream for other information such as closed captioning, TSID, viewership tracking data, among others.[14] The Commission also inquires as to whether it should require all broadcasters to construct and transmit PSIP information and whether such a requirement would result in an incompatibility between broadcast signals and digital equipment that does not search for PSIP information.[15] Sharp believes that PSIP is integral to the DTV conversion and that the Commission should require broadcasters to construct and transmit PSIP information. A requirement for broadcasters to emit full, correct and com-

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14 *NPRM* ¶ 116.

15 *Id.*

plete PSIP would cause no adverse effects on devices that were designed to either (a) not use PSIP at all, or (b) use some combination of PSIP and non-PSIP data.

Because the PSIP standard is not mandatory, digital equipment must be designed to both recognize correct PSIP information, as well as incorrect PSIP information and discard it or attempt to understand what was meant to be communicated (determine at run-time how the standard was *not* followed). As noted above, incorrect PSIP information, such as the Transport Stream Identifier, may actually have significant adverse affects on other broadcasters, where, for example, a broadcaster's programming is blocked or the program of one broadcaster may appear on another broadcaster's channel. Furthermore, without PSIP, viewer confusion results from the lack of consistent channel numbering and navigation, and broadcasters may find that viewers are unable to find digital services or associate them with the associated analog programming.

For these reasons, it is critical that the Commission mandate the use of the ATSC A/65B standard and require broadcasters to transmit PSIP information.

1. Transport Stream Identification ("TSID") Assignments

In its NPRM, the Commission also asks for comment on additional information that can be included in the PSIP, including the transport stream identification.[16] As the Commission has recognized, TSID assignments must be unique and there must be coor-

[16] *NPRM* ¶ 116. TSID is part of the ATSC PSIP standard A/65 and is used to identify transport streams. Each digital television broadcaster must be assigned a unique TSID, which permits DTV receivers to tune between programs arriving from different sources and select the desired channel. *See* Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, *First Report and Order*, MM Docket No. 00-39, 16 FCC Rcd. 5946, n. 118 (2001).

dination on such assignments.[17] The Commission has agreed to administer and incorporate TSID assignments into its broadcast licensing process, but indicated it could not do so until its negotiations with Canada and Mexico on the DTV matter are complete and it has modified its licensing process and management records.[18] Currently, TSID assignments continue to be administered by the industry. We urge the Commission to take the steps necessary to facilitate its administration of the TSID assignments, and we offer the following recommendations on incorporating the TSID assignments into the Commission's licensing process.

The Commission should undertake maintenance of a registry of TSID values, and should require broadcasters to acquire and use such TSID values from the Commission's registry.[19] In registering TSIDs, the Commission should note that there are and should be different unique values for both the "analog Transmission Signal ID" (as defined in EIA/CEA-608-B) and the Transport Stream ID (as defined in MPEG). Consumer receivers depend on accurate, stable, reliable and unique TSIDs for proper operation of tuning and navigation functions. If such accurate, stable, reliable and unique data is not assured, receivers will not be able to navigate, tune and display broadcast signals properly, if at all. Furthermore, without regulation and registry of these values by the Commission, it is possible that incorrect or errant TSID values may be broadcast by one broadcaster in such

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17 Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, *Second Report and Order*, MM Docket No. 00-39, 17 FCC Rcd. 15978, ¶ 53 (2002).

18 *Id.*

19 As the Commission is aware, the Association for Maximum Service Television ("MSTV") has undertaken the task of maintaining a list of TSIDs in use in a manner suitable for use by the Commission when setting up a registry. *See* http://www.mstv.org/downloads/TSIDASGN.doc.

a way as to cause another broadcaster to appear "off-air," because no consumer tuner is able to navigate and tune to it.

2. Changes to Major Channel Numbers Must be Subject to Certain Parameters

In its NPRM, the Commission seeks comment on whether it should modify the ATSC PSIP standard to permit licensees to revise its major channel number.[20] As the Commission explains, the current standard identifies the "major channel number" as the broadcaster's current NTSC RF channel number.[21] The Commission asks whether there may be circumstances in which a broadcaster may want to use its digital RF channel number as its "major channel number" and whether it should modify the PSIP standard to allow for such a switch. If the Commission should modify the PSIP standard to permit licensees to use their digital RF number or other number as the "major channel number," it should do so consistent with related constraints on such assignments set forth in the PSIP standard.

ATSC A/65 PSIP Annex B describes a method whereby (a) consumers are easily able to remember the major channel number of broadcasters (which would be, generally speaking, identical to the analog channel number they are used to); (b) is geographically unique; and (c) is self-administered without registry by the Commission or other agency. Additionally, major channel numbers greater then 69 are given special properties. The procedure in PSIP Annex B expresses a preference for assigning the major channel num-

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20 *Id.* ¶ 117

21 *Id.*

ber the value of the broadcaster's analog channel with only limited mechanisms for using a different value (for example, in a duopoly situation).

If the Commission wishes to establish a different mechanism for assigning major channel numbers, it should maintain the following constraints, which are built into Annex B: (a) The major channel number must be geographically unique; (b) the major channel number should not be restricted to a specific digital broadcast signal; (c) the channel_TSID and source_id are exactly associated with the two-part channel number combinations used by the referenced broadcaster and there is no duplication with those used by any broadcaster whose DTV service area overlaps with the emitting station's DTV service area.[22]

D. Closed Captioning

In the NPRM, the Commission seeks comments on whether a difference in closed captioning requirements permits, or is likely to permit**,** a situation in which a broadcaster places all of its closed captioning information, including caption service descriptors, in the program stream, but a manufacturer builds its closed captioning equipment to acquire needed information from the PSIP.[23] The Commission also seeks comments on whether all digital television broadcasters should place the caption service descriptor in the PSIP.[24]

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22 *See* ATSC Standard: Program and System Information Protocol, Annex B, ¶ 1.6.

23 *See NPRM* ¶ 119.

24 *See NPRM* ¶ 120.

Sharp believes that the Commission should require caption service descriptor carriage as defined in ATSC A/65B PSIP. As such, for terrestrial broadcasts the caption service descriptor must be in the EIT and, optionally, also may be located in the PMT.

Sharp is of the opinion that the Commission misinterpreted the EIB-708-B standard in the NPRM. EIA-708-B states, "The caption_service_descriptor() is defined by ATSC A/65, and is carried in the PMT and, when present, the EIT of the MPEG-2 Transport Stream"[25] This should not be read to imply that in situations where the EIT is not present, a DTV receiver should be capable of retrieving the caption service descriptor from the PMT. To the contrary, the meaning of "when present" in relation to the EIT merely refers to situations where EIA-708-B captions are part of a cable-originated program carried over a cable television system, which would not require EITs due to the cable practice of providing program guide data carriage over an out-of-band channel. In this case, the caption service descriptor must be carried in the PMT.

The use solely of PMTs is not, however, an appropriate solution for over-the-air broadcast. In such instances, information concerning future programming may only be communicated via EITs. This is significant as information regarding the caption content (or lack thereof) of future programming is extremely valuable to those that rely on captioning for television viewing.

Therefore, while a receiver may make good use of caption description data carried in the PMT, the use of PMTs is not a complete solution. Receivers are very likely to make good use of information about captioning of future programming in whatever inter-

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[25] *See* EIA-708-B, §4.5 (December 1999).

face the receiver displays for the consumer interested in captioning information. As such, Sharp recommends that for terrestrial broadcast, the Commission require the carriage of the caption service descriptor in the EIT, while allowing optional use of the PMT as well.

E. V-Chip

The Commission also inquires whether more needs to be done to ensure the availability of v-chip functionality.[26] Sharp believes that, in relation to v-chip functionality, the Commission should not require the broadcasting of the Rating Region Table ("RRT") for rating region 0x01, as ATSC A/65B indicates. The Commission should require, however, that the rating region 0x01 be as defined in EIA/CEA-766-A. Taking these measures will help ensure that v-chip functionality is available in the DTV context.

Currently, if a program carries a content advisory, the ATSC A/65B PSIP defined content advisory descriptor is required in the PMT for cable broadcasts. In such situations, the content advisory descriptor also would be required in the EIT if the EIT were carried. Regarding terrestrial broadcasts, the content advisory descriptor is required in the EIT. The descriptor is optional in the PMT for terrestrial broadcasts, however, due to the fact that programs may be acquired, tuned, and displayed by a terrestrial broadcast receiver without acquiring or processing the PMT.

Numerous consumer electronics companies currently are designing and/or selling digital televisions that do or will utilize the content advisory data as defined by the existing PSIP standard. Further, pursuant to the Commission's *V-Chip Order*, digital televi-

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[26] *See NPRM* ¶ 121.

sions are required to "react in a similar manner as analog televisions" with respect to v-chip blocking.[27]

The rating system for the United States as implemented in analog televisions is described in EIA/CEA-608-B. This system utilizes different textual definition for various subcategories. For example, the 'L' (Language) bit means either "infrequent coarse language" (TV-PG), "strong coarse language" (TV-14), or "crude indecent language" (TV-MA). Further, the meaning of 'L' depends on the main rating.

The design of the RRT, while expandable, does not accommodate interdependency between different "ratings dimensions." Thus, to allow the digital television system to "react in a similar manner" to their analog counterparts, the EIA/CEA-766-A standard was defined to describe the U.S. rating region in terms of the digital system RRT.

As a result, digital receivers must have knowledge of the contents of EIA/CEA-766-A. Future changes to the United States rating region can not be signaled to a receiver by a change in the information contained in the RRT for rating region 0x01, as receivers must have this information "hard-coded." Thus, broadcast of this specific RRT is unnecessary.

Future changes can be signaled by broadcasting a RRT identifying the rating system and a different rating region value. If this were to be necessary, programs can continue to be rated on the old system and *additionally* rated by the new system.

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[27] *See* Implementation of Section 551(c), (d), and (e) of the Telecommunications Act of 1996: Technical Requirements to Enable Blocking of Video Programming Based on Program Ratings, 13 FCC Rcd. at 11258-11259, ¶¶ 25-29 ("V-Chip Order"). *See also* 47 C.F.R. § 15.120. *See also NPRM* n. 177.

Conversely, for rating systems other then the existing analog system, the RRT can fully describe the rating system. As a result, broadcast of those RRTs is a necessary and desirable feature.

V. Conclusion

Sharp encourages the Commission to adopt regulations that facilitate and foster the conversion to digital television and consumer demand for digital receivers and displays. Actions the Commission can take to further this goal are to: (1) establish defined deadlines for market forces to produce and carry HDTV programming, which, if not met, will result in government-mandated requirements; (2) make the ATSC A/65B PSIP Standard mandatory; (3) facilitate the incorporation of the TSID Assignment process into its rules; and (4) require Active Format Description data usage as defined in ATSC A/65B PSIP, under certain conditions.

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